
Space Weather Forecast

Issued on Wednesday, 28 September 2022 at 01:16 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: G1-G2/Minor-Moderate geomagnetic storms likely to develop from late day 3 (30 Sept). Chance of R1/Minor Radio Blackouts throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low with several C-class flares observed, mostly from two regions located in the southwest quadrant. These are one of four numbered active regions and one un-numbered region on the visible disc. Three regions are of moderate longitudinal extent, one in the northeast quadrant, and two already mentioned above in the southwest. The new un-numbered region near the northeast limb appears to be a single moderate size unipolar spot.

No Earth-directed CMEs have been observed in the last 24 hours.

Solar Wind / Geomagnetic Activity: Solar wind parameters have indicated a combination of high speed stream and coronal mass ejection influences, with the latter appearing to have now waned.

The solar wind speed rose from background to elevated levels during the second half of the UTC day. The total Interplanetary magnetic field strength became briefly Very Strong, then gradually declined back to weak levels. The north-south component followed a similar trend but stayed mostly positive during much of the Strong and Very Strong periods. Geomagnetic activity was at G1/Minor Storm level for the initial 27/0000-0300UTC interval, then Quiet to Active (Kp 2 to 4) thereafter.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was very slightly raised above normal background levels, but well below the level of a solar radiation storm.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to be generally Low, with a chance of isolated Moderate-class flares, primarily from the two regions in the southwest quadrant.

Solar Wind / Geomagnetic Activity: Elevated solar winds speeds are expected to reduce back to slightly elevated levels by day 2 (29th) due to waning coronal hole high speed stream effects. The next fast stream of solar wind, from a returning coronal hole, is then expected to arrive from late day 3 (30th) or perhaps day 4 (1st Oct), and continue through the weekend UTC, with strong solar winds likely to develop.

Geomagnetic activity is likely to be mostly Quiet to Unsettled, but with isolated Active intervals still possible in the first half of day 1 (28th). From the second half of day 3 (30th) onward, G1/Minor storm intervals are likely to develop, with a chance of G2/Moderate storms, and a slight chance of isolated G3/Strong storms.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to remain at or slightly above background levels. Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

protons) is likely to persist close to background levels, with a slight chance of an S1 (or greater) solar radiation storm if any notable flares occur, most likely from the regions in the southwest quadrant.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	Yes	20	5	60	70
Strong	G3	No	1	1	10	10
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	30	30	30	30
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)